

# JAPAN

## EDICT OF GOVERNMENT

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

JIS B 6600 (1978) (English): Safety standards for construction of rip saw and gang rip saw

安

*The citizens of a nation must  
honor the laws of the land.*

Fukuzawa Yukichi

併

BLANK PAGE



BLANK PAGE



# JIS

**JAPANESE INDUSTRIAL STANDARD**

**Safety Standards for  
Construction of Rip Saw  
and Gang Rip Saw**

**JIS B 6600**—1978

**Translated and Published**

**by**

**Japanese Standards Association**

Translation without guarantee  
In the event of any doubt arising, the original  
standard in Japanese is to be evidence

## JAPANESE INDUSTRIAL STANDARD

J I S

Safety Standards for Construction of  
Rip Saw and Gang Rip Saw

B 6600-1978

1. Scope

This Japanese Industrial Standard specifies the safety standards for construction of rip saws and gang rip saws to be used for woodworking.

Remark: The rip saws<sup>(1)</sup> and gang rip saws shall comply not only with the requirements laid down in this standard but also with the Industrial Safety and Health Law (Industrial safety and Health regulations and the construction standards for woodworking circular saws and their devices for preventing the backward movement of workpieces and the contact with saw teeth).

Note (1) Refer to JIS B 6512.

2. Definitions

For the purposes of this standard, the following definitions apply:

- (1) pressing-device A device which has a junction to permit the carriage to feed workpieces securely and to prevent them from moving backward by pressing them from their upper side.
- (2) carriage A device which feeds workpieces automatically, carrying them on it and holding them together with the pressing device.
- (3) groove for saw A groove which is provided, in advance, at the centre of a caterpillar piece in order to permit the tooth tip of a circular saw to pass through it (see Fig. 1).
- (4) preventing claws Claws which act as a stopper to prevent the backward movement of workpieces by directly sticking into the surface of the workpieces which are liable to be pushed backward.
- (5) spring-back preventing claws Claws which act as a screen to protect operators against the spring-back of end pieces, wood chips and others.
- (6) upper claws Claws which act upon the surface of workpieces from their upper side.
- (7) lower claws Claw which act upon the surface of workpieces from their lower side.

---

Applicable Standards and Reference Standards are: See page 11.

### 3. Rip Saw

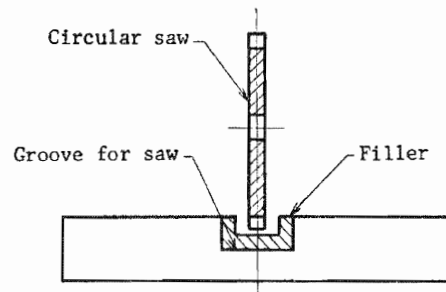
3.1 Pressing Device The rip saw shall be provided with a roll pressing device composed of pressing rollers, pressing springs, elevating mechanism and others, to hold workpieces and be as follows:

- (1) In a rip saw in which the saw spindle is located above the table, the pressing rollers shall be composed of main rollers and split rollers. At least two main rollers shall be provided, one at the front of the circular saw and the other at the rear, and at least 2 sets of the split rollers be arranged so as to interpose the saw blade between them.
- (2) In a rip saw in which the saw spindle is located below the table, at least each set of the two main rollers shall be provided at the front and the rear of the circular saw.
- (3) The length of the main rollers shall be decided on the basis of the width of the carriage and be long enough to press workpieces securely.
- (4) The interval between the split rollers and the saw blade shall not exceed 4 mm for the rip saw with saws of 350 mm or under in diameter, and 6 mm for the rip saw with saws of more than 350 mm in diameter.
- (5) The material of the pressing rollers shall be FC 20 specified in JIS G 5501 or that having equivalent or superior tensile strength to FC 20. However, rubber, synthetic resin and the like may be used for the surface material of the pressure rollers so as not to cause flaws on workpieces.
- (6) The pressing springs for the pressing rollers shall have such strength that these are capable of securely preventing workpieces from lifting.
- (7) With respect to pressing rollers, attention shall sufficiently be paid to the following items to make possible the certain feed of workpieces.
  - (a) Parallelism of the saw spindle with each of the pressing rollers.
  - (b) Parallelism of the caterpillar chain or the upper surface of feed rollers with each of pressure rollers.
  - (c) Parallelism of the feed direction of the carriage with the plane perpendicular to each of the axes of pressing rollers.
  - (d) Cylindricity of each of the pressing rollers.
- (8) The mechanism for elevating the pressing rollers shall be capable of adjusting the height according to the thickness of workpieces, and be so constructed that the ascending or descending amount of the pressing rollers can be read correctly and that the rollers can be fixed so as not to move upward and downward during the feed of workpieces.

3.2 Carriage The rip saw shall be provided with the equipment with caterpillar or feed rollers for carrying workpieces and be in accordance with the following.

- (1) The width of the caterpillar chain shall be such that it is capable of sufficiently holding and carrying workpieces together with the pressing device.
- (2) The material of the caterpillar pieces shall be FC 25 specified in JIS G 5501 or that having equivalent or superior tensile strength to FC 25, and shall be of high abrasion resistance. The requirement of the tensile strength, however, does not apply to the case of the rip saw with saws of 300 mm or under in diameter and with the feed motor having a rated output of 0.75 kW or under.
- (3) The surface of the caterpillar pieces shall be such construction as to cause no slip between the surface of the caterpillar pieces and the workpieces.
- (4) In the grooves on the caterpillar pieces provided for saws, fillers such as rubber, reinforced wood, lead or sealing material shall be embedded sufficiently and firmly as shown in Fig. 1. so that they do not fall off.

Fig. 1. Groove for Saw and Filler



- (5) With respect to the caterpillar chain, attention shall be paid to the following items, so that workpieces can be fed securely.
  - (a) Parallelism of the centre line of the saw spindle with the upper surface of the caterpillar chain.
  - (b) Parallelism of the centre line of the saw spindle with the travelling direction of the caterpillar chain.
  - (c) Perpendicularity of the upward and downward movement of the saw spindle with the upper surface of the caterpillar chain.
  - (d) Straightness of the travelling direction of the caterpillar chain.
  - (e) Height from the table surface to the upper surface of the caterpillar chain.



- (6) In the case of the carriage of feed roller type, attentions shall be paid to the number of rollers and their arrangement, their combination with the pressing rollers, and the like, and the carriage shall be so constructed that rapid upward and downward movement of workpieces does not taken place during the feed of workpieces.

Furthermore, the carriage shall be so constructed that the insertion of the hands between the upper and the lower rollers is impeded during its running.

### 3.3 Backward Movement Preventing Claw and Spring-back Preventing Claw

3.3.1 The spring-back preventing claws shall be furnished, by all means, on the feed-into side of the rip saw.

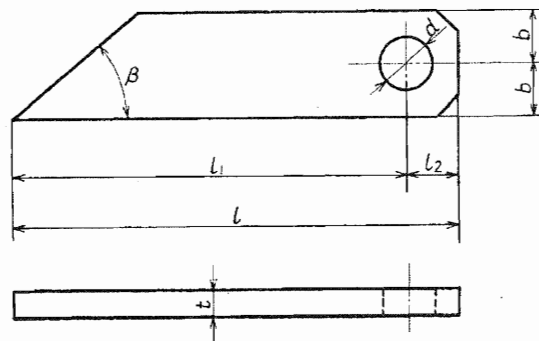
Furthermore, the backward movement preventing claws shall be furnished, as required.

3.3.2 Construction, Shape and Dimensions of Claws The construction, shape and dimensions of the claws shall be in accordance with the following:

- (1) Backward Movement Preventing Claw The claws for preventing backward movement shall generally be upper claws, and they shall have the shape<sup>(2)</sup> as shown in Fig. 2, and their dimensions shall be with the following ranges.

Furthermore, the tip of the claws shall be sufficiently sharp.

Fig. 2. Shape and Dimension of Claw



Note <sup>(2)</sup> This shape may be altered within the range of the specified dimensions.

- (a) Dimension,  $d$ , shall be approximately equal to the diameter of a supporting shaft, and the diameter of the supporting shaft shall have such size as to sufficiently withstand an impact due to workpieces being pushed backward.
- (b) Dimensions,  $b$  and  $L_2$ , shall be equal to or longer than the dimension of  $d$ .

- (c) Dimension,  $l_1$ , shall be 100 mm or over. However, if it is unavoidable that a size under 100 mm, is to be taken as the dimension  $l_1$ , either its contact load<sup>(3)</sup> shall be increased or the contact angle  $\alpha$  (see Fig. 4) shall be taken as larger as possible within the specified range<sup>(4)</sup>.

Notes (3) The load which a claw exert on a workpiece when the claw is in contact with the workpiece at its tip.

(4) The range specified in (2) (a) of 3.3.4.

- (d) Dimension,  $t$ , shall be 8 mm or over.

- (e) Angle,  $\beta$ , shall be 30° or over to 60° or under.

- (2) Spring-back Preventing Claws The spring-back preventing claws shall be upper claws, and of which the shape and dimensions shall comply with the requirements for the backward movement preventing claws prescribed in (1). However, the dimension of  $t$  shall be 3 mm or over to 12 mm or under, and a larger size for  $t$  shall be taken for a longer size of  $l_1$ .

3.3.3 Material of Claws The material of claws shall be in accordance with the following:

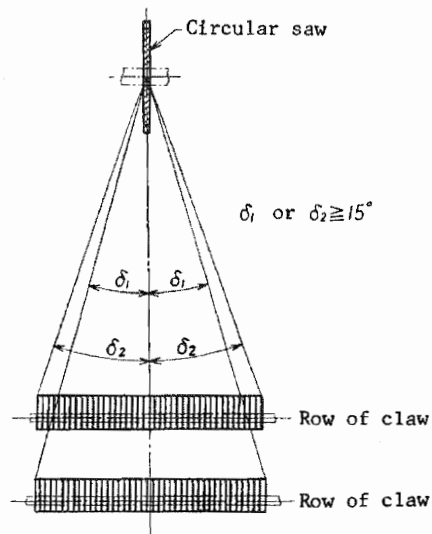
- (1) Backward Movement Preventing Claws The material of the backward movement preventing claws shall be SS 41 specified in JIS G 3101 or that having equivalent or superior mechanical properties to SS 41, and the claw tip shall be subjected to hardening treatment to enhance its abrasion resistance.
- (2) Spring-back Preventing Claw The material of the spring-back preventing claws shall be SS 41 specified in JIS G 3101 or that having equivalent or superior mechanical properties to SS 41.

3.3.4 Number, Width and Height of Rows of Claws The number, width and height of rows of claws shall be in accordance with the following:

- (1) Number and Width of Rows of Claws
- (a) For the rip saw with saws exceeding 350 mm in diameter, 1 row or more of the backward movement preventing claws and 2 rows or more of the spring-back preventing claws shall be arranged.
- (b) For the rip saw with saws of 350 mm or under in diameter, 2 rows or more of the spring-back preventing claws shall be arranged. In this case, 1 row of the claws may be replaced with the row of the backward movement preventing claws.
- (c) The claws in each row shall be arranged closely in so far as these can be moved free to each other around the shaft supporting them.
- (d) The width of the row of the backward movement preventing claws shall be equal to or longer than the length of the main roller.

- (e) The width of the row of the spring-back preventing claws shall extend sufficiently to the left and right of the centre of the circular saw. In this case, both ends of either of the rows of the claws shall be wider so that the lines joining the centre of the circular saw and both ends respectively meet the line of feed direction at an angle of  $15^\circ$  or over, as shown in Fig. 3, on the upper surface of the caterpillar chain or the feed rollers.

Fig. 3. Width of Row of Claws (Rip Saw)

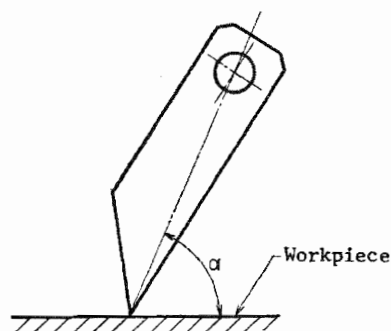


- (f) Respective claws of two rows of the spring-back preventing claws shall be arranged in zigzag relative to each other as shown in Fig. 3.

(2) Height of Row of Claws

- (a) The height of a row of the backward movement preventing claws shall be such that the tips of the claws are always kept in contact with the surface of workpieces, irrespective of adjustment of the machine and the thickness of workpieces, and shall meet the condition that the contact angle  $\alpha$  (Fig. 4) of the claw with a workpiece is always at  $65^\circ$  or over to  $80^\circ$  or under.

Fig. 4. Contact Angle



- (b) The height of a row of the spring-back preventing claws shall be such that the tips of the claws are always kept in contact with the caterpillar chain or table, irrespective of adjustment of the machine.

Furthermore, the claws shall be pushed up by a work-piece to be fed with little resistance, and shall come back rapidly to their original position, after the workpiece has passed.

- (c) The row of the backward movement preventing claws shall be provided with the stopper for preventing the claws from their sideward shifting and from their reversing.
- (d) The stopper shall be sufficiently enduring to the shock due to workpieces being sprung-back or pushed back.

**3.4 Dust Collecting Cover** The rip saw shall be equipped with the dust collecting cover so that the functions of the carriage, pressing device, backward movement preventing claws and spring-back preventing are not impaired due to falling down of saw dusts, chips and others. Regarding the dust collecting cover, sufficient attention shall be paid to the following items for enhancing the dust collecting efficiency by smoothing the flows of saw dusts, chips and others into the dust collecting opening.

- (1) Construction and shape of the inside surface of the dust collecting cover.
- (2) Position and direction to install the dust collecting opening.
- (3) Quantity of suction air.

**3.5 Other Equipment** The rip saw, for enhancing safety performance, should preferably be installed with the following equipments.

- (1) Braking devices for the saw spindle and carriage.
- (2) Power switches of automatic open circuit type actuated at the time of a stoppage of electric power.

#### **4. Gang Rip Saw**

**4.1 Pressing Device** The gang rip saw shall be equipped with a pressing roller device composed of pressing rollers, pressing springs, elevating mechanism, and others to press workpieces and shall be in accordance with the following:

- (1) A least two pressing rollers shall be equipped, one at the front of the circular saw, and the other at the rear.
- (2) The length of the pressing rollers shall be determined on the basis of the width of the carriage, and be such that workpieces are securely pressed.
- (3) The material of the pressing rollers, pressing springs, the parallelism, elevating mechanism, etc. shall comply with the requirements specified in 3.1 (5), (6), (7) and (8) of 3. Rip Saws.

4.2 Board Pressing Device The gang rip saw shall be equipped with a board pressing device which prevents workpieces from being lifted up during sawing, and shall be in accordance with the following:

- (1) The board pressing device shall be capable of fitting the board presser so that the lower surface of the board presser always parallels the feed direction of workpieces.
- (2) The pressing springs of the board pressing device shall be adjustable for the pressing force by which the board presser presses the workpiece.
- (3) The pressing springs and board presser of the board pressing device shall be so strong that they are capable of preventing the workpieces from lifting up.

4.3 Carriage The gang rip saw shall be provided with a carriage having a caterpillar or feed rollers to feed workpieces, and the carriage shall be in accordance with the following:

- (1) The material of the caterpillar pieces shall be FC 25 specified in JIS G 5501 or that having equivalent or superior tensile strength to FC 25, and be of high abrasion resistance.
- (2) The width of the caterpillar chain, the surface of the caterpillar pieces, the parallelism of the caterpillar chain, the number of feed rollers, etc. shall comply with the requirements laid down in 3.2 (1), (3), (5) and (6) of 3. Rip Saws.

#### 4.4 Backward Movement Preventing Claws and Spring-back Preventing Claws

4.4.1 The backward movement preventing claws and spring-back preventing claws shall be equipped, by all means, on the workpiece feeding side of the gang rip saw.

4.4.2 Construction, Shapes and Dimensions for Claws The construction, shapes and dimensions of claws shall be in accordance with the following:

- (1) Backward Movement Preventing Claws The backward movement preventing claws shall be of upper claws, and the construction, shape and dimensions shall comply with the requirements specified in 3.3.2 (1) of 3. Rip Saws.
- (2) Spring-back Preventing Claws The spring-back preventing claws shall be of upper claws and lower claws.

The shape and dimensions of the upper claws shall conform to the requirements for the spring-back preventing claws prescribed in 3.3.2 (2) of 3. Rip Saws.

Furthermore, the shape and dimensions of the lower claws shall be the same as the upper claws, except enlarging  $b$  and  $l_2$  of Fig. 2 to satisfy the requirements of 4.4.4 (2) (b).

4.4.3 Material of Claws The material of claws shall be in accordance with the following:

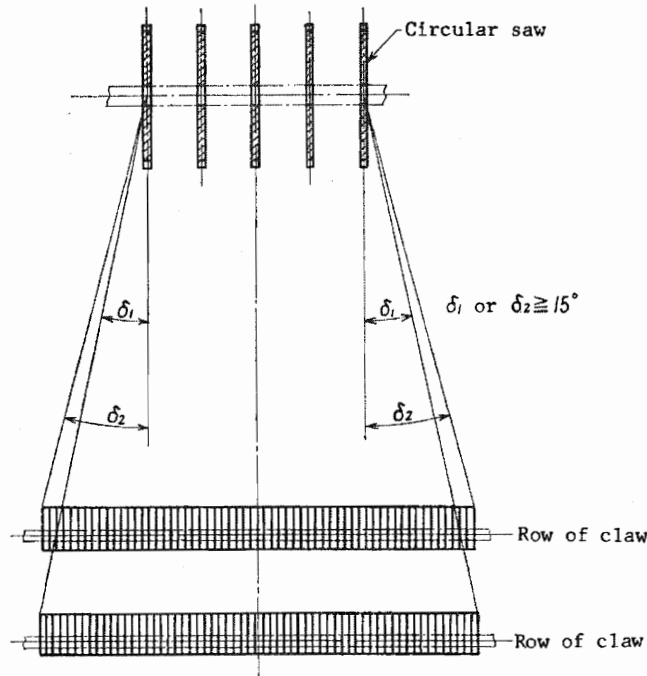
- (1) Backward Movement Preventing Claws The material of the backward movement preventing claws shall comply with the requirements laid down in 3.3.3 (1) of 3. Rip Saws.
- (2) Spring-back Preventing Claws The material of the upper claws used for the spring-back preventing claws shall comply with the requirements specified in 3.3.3 (2) of 3. Rip Saws.

Furthermore, the materials of the lower claws shall be of SS 41 specified in JIS G 3101 or as specified in JIS G 5502, or those having equivalent or superior mechanical properties.

4.4.4 Number, Width and Height of Rows of Claws The number, width and height of rows of claws shall be in accordance with the following:

- (1) Number and Width of Rows of Claws
  - (a) One row or over of the backward movement preventing claws, and two rows or over of the spring-back preventing claws shall be arranged.
  - (b) The width of the rows of the backward movement preventing claws shall be equal to or wider than the maximum width for mounting the circular saw.
  - (c) The width of the rows of the spring-back preventing claws shall sufficiently extend to the left and the right of the centres of the circular saws mounted on the outermost left and right sides. In this case, the width of both ends of either of the rows of claws shall be such that the lines respectively joining the centres of the circular saws mounted on the outermost left and right sides and both ends of the row meet the line of the workpiece feed direction at an angle of 15° or over, as shown in Fig. 5, on the upper surface of the caterpillar chain or the feed rollers. This rule, however, does not apply to the case where side protecting boards are provided coming into contact with both sides of each row of the spring-back preventing claws.

Fig. 5. Width of Rows of Claws (Gang Rip Saw)



- (d) The function and arrangement of the claws shall conform to the requirements laid down in 3.3.4 (1) (c) and (f) of 3. Rip Saws.

(2) Heights of Rows of Claws

- (a) The height of the rows of the backward movement preventing claws and spring-back preventing claws, stoppers, etc. shall comply with the requirements specified in 3.3.4 (2) of 3. Rip Saws.
- (b) The height of the row of the lower claws used for the spring-back preventing claws, irrespective of the adjustment of the machine, shall be such that the tip of the claws is always kept in a protruded condition sufficiently upward from the upper surface of the caterpillar chain or feed rollers.

Furthermore, the claws shall be pushed down with little resistance, by a workpiece fed and come back rapidly to the original position, after immediately the workpiece has passed.

**4.5 Side Protecting Boards** The gang rip saw shall be provided with the side protecting boards which catch chips scattering to the sides.

**4.6 Dust Collecting Covers** The dust collecting covers shall comply with the requirements specified in 3.4 of 3. Rip Saws.

**4.7 Other Equipment** The gang rip saw should preferably be fitted with the following equipments for the purpose of enhancing safety performance.

- (1) Braking devices for the saw spindle and carriage.
- (2) Power switches of automatic open circuit type actuated at the time of a stoppage of electric power.

---

Applicable Standards:

JIS B 6512-Rip Saws  
JIS G 3101-Rolled Steel for General Structure  
JIS G 5501-Gray Iron Castings  
JIS G 5502-Spheroidal Graphite Iron Castings

Reference Standards:

JIS B 0114-Glossary of Terms for Wood Working Machinery  
JIS B 4802-Wood Circular Saws  
JIS B 6501-Test Code for Performance and Accuracy of Wood Working Machinery



B 6600-1978  
Edition 1

---

Japanese Text

Established by Minister of International Trade and Industry

Date of Establishment: 1978-03-01

Date of Public Notice in Official Gazette: 1978-04-20

Investigated by: Japanese Industrial Standards Committee

Divisional Council on Machine Tools

Technical Committee on Woodworking Machines

---

This English translation is published by:  
Japanese Standards Association  
1-24, Akasaka 4, Minato-ku,  
Tokyo 107 Japan  
© JSA, 1986

Printed in Tokyo by  
Hohbunsha Co., Ltd.